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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,749	10/19/2004	Daisuke Adachi	43890-700	4951
7590 McDermott Will & Emery 600 13th Street N W Washington, DC 20005-3096			EXAMINER RAYMOND, BRITTANY L	
			ART UNIT 1722	PAPER NUMBER
			MAIL DATE 10/13/2010	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/511,749

**Applicant(s)**

ADACHI, DAISUKE

**Examiner**

BRITTANY RAYMOND

**Art Unit**

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 8 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (U.S. Patent 5008166) in view of Rieger ("Image Quality Enhancement for Raster Scan Lithography") and Kim (U.S. Patent Publication 2003/0215747)

Aoki discloses a manufacturing method of a color filter comprising: forming a photosensitive dyeable layer over signal electrodes on a substrate, irradiating light onto a portion of the dyeable layer using a photomask, moving the photomask by a certain distance, and irradiating the dyeable layer with light a second time (Col. 5, Line 60-Col.

6, Line 26), as recited in claim 1 of the present invention. Aoki also discloses that the distance the photomask is moved is set to a value larger than any dust that may adhere to the photomask (Col. 6, Lines 26-29). Aoki states that the photomask can essentially be moved in any way, if some of the corresponding filter elements are overlapped for exposure (Col. 8, Lines 47-49), as recited in claim 1 of the present invention.

Aoki fails to disclose that the mask and substrate are moved relative to one another such that the movement is less than the width of one of the elements, that the exposure method is used to form structures or electrodes of a plasma display panel, and that the electrodes are address electrodes, which are formed by exposing a photosensitive silver paste on a substrate.

Rieger discloses a process of printing a feature twice onto a substrate and shifting the mask by half a width of the feature in between the two exposures (Page 62, last paragraph), as recited in claim 1 of the present invention.

Kim discloses a process of forming an address electrode on a plasma display panel comprising: printing the whole surface of a substrate with a photosensitive electrode paste, drying the paste, lining up a photomask corresponding to the electrode pattern, irradiating the paste to light through the photomask, applying a development solvent to the paste to remove non-exposed areas, and heating the paste to obtain the electrode (Paragraph 0047), as recited in claims 1 and 8 of the present invention. Kim also discloses that the photosensitive electrode paste comprises silver powder (Paragraph 0040), as recited in claim 8 of the present invention.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have formed electrodes on a plasma display panel using the process of Aoki, as suggested by Kim, because Kim teaches that structures on a plasma display are also formed by exposing and patterning a photosensitive layer through a photomask, which can be subjected to dust particles. It also would have been obvious to one of ordinary skill in the art to have formed the electrodes with a silver paste, as suggested by Kim, because Kim teaches that silver is a common material used in the formation of accurate address electrodes of a plasma display panel. Finally, it would have been obvious to one of ordinary skill in the art, to have moved the mask of Aoki by a distance less than the width of a feature, as suggested by Rieger, because Rieger teaches that this technique reduces errors that can be caused on the patterned layer.

4. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (U.S. Patent 5008166) in view of Huang (U.S. Patent Publication 2004/0076889) and Kim (U.S. Patent Publication 2003/0215747)

Aoki discloses a manufacturing method of a color filter comprising: forming a photosensitive dyeable layer over signal electrodes on a substrate, irradiating light onto a portion of the dyeable layer using a photomask, moving the photomask by a certain distance, and irradiating the dyeable layer with light a second time (Col. 5, Line 60-Col. 6, Line 26), as recited in claim 2 of the present invention. Aoki also discloses that the distance the photomask is moved is set to a value larger than any dust that may adhere to the photomask (Col. 6, Lines 26-29). Aoki states that the photomask can essentially

be moved in any way, if some of the corresponding filter elements are overlapped for exposure (Col. 8, Lines 47-49), as recited in claim 2 of the present invention.

Aoki fails to disclose that the mask and substrate are moved relative to one another such that the movement is greater than two pitches between the mask elements, that the exposure method is used to form structures or electrodes of a plasma display panel, and that the electrodes are address electrodes, which are formed by exposing a photosensitive silver paste on a substrate.

Huang discloses an exposure method comprising: providing a mask having two sections with pattern matching being equally divided on the mask, performing an exposure of a chip through the mask by exposing the chip to one section of the mask, moving the mask a distance and exposing the chip to the second section of the mask, and performing this process for several chips (Paragraph 0031 and Figure 4), as recited in claim 2 of the present invention. It is apparent from Figure 4 that there are three of the same patterns next to one another and there would be a small pitch between each "E" pattern. It is also apparent that after the mask is moved, the three patterns are moved to the next section, which is greater than one of the pitches between the mask patterns, as recited in claim 2 of the present invention.

Kim discloses a process of forming an address electrode on a plasma display panel comprising: printing the whole surface of a substrate with a photosensitive electrode paste, drying the paste, lining up a photomask corresponding to the electrode pattern, irradiating the paste to light through the photomask, applying a development solvent to the paste to remove non-exposed areas, and heating the paste to obtain the

electrode (Paragraph 0047), as recited in claims 2 and 9 of the present invention. Kim also discloses that the photosensitive electrode paste comprises silver powder (Paragraph 0040), as recited in claim 9 of the present invention.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have formed electrodes on a plasma display panel using the process of Aoki, as suggested by Kim, because Kim teaches that structures on a plasma display are also formed by exposing and patterning a photosensitive layer through a photomask, which can be subjected to dust particles. It also would have been obvious to one of ordinary skill in the art to have formed the electrodes with a silver paste, as suggested by Kim, because Kim teaches that silver is a common material used in the formation of accurate address electrodes of a plasma display panel. Finally, it would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have moved the mask of Aoki a distance greater than at least two pitches between the mask elements, as suggested by Huang, because Huang teaches that this enhances the resolution of the exposure process.

#### ***Response to Arguments***

5. Applicant's arguments, filed 6/23/2010, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art references.

Applicant argues that Aoki does not teach moving a photomask and the photosensitive material in the widthwise direction relative to each other by a distance

less than  $w$  between the first and second exposures. The reference, Rieger, has been added to teach a process of performing two exposures on the same area of a substrate, but moving the mask by a distance of half the width of the feature on the mask between the two exposures. This is equivalent to the mask movement as recited in claim 1 of the present invention. It would have been obvious to one of ordinary skill in the art to use this technique with the process of Aoki because Rieger teaches that the process reduces the amount of errors formed on the substrate.

Applicant also argues that Aoki fails to disclose moving a photomask and photosensitive material relative to each other by two or more integral times the distance  $p$ , wherein  $p$  is the pitch between exposure parts of the photomask. The reference, Huang, has been added to teach a process of performing multiple exposures of an area of several patterns on a mask onto a substrate. Huang discloses that after each exposure, the mask is moved to the next region, which is a distance greater than twice a pitch between the mask patterns. Each "E" pattern of Figure 4 would correspond to a single pattern, making the pitch between the patterns very small. Therefore, when the mask is moved to the next region, the distance it moves is much greater than a single pitch. It would have been obvious to one of ordinary skill in the art, to have used this technique in the process of Aoki because Huang teaches that it enhances the resolution of the exposure process, such that the final product is more accurate.

Kim is relied upon to teach that the process can be used to form address electrodes, and that the photosensitive layer can contain silver powder.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY RAYMOND whose telephone number is (571)272-6545. The examiner can normally be reached on Monday through Friday, 9:00 a.m. - 5:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Kathleen Duda/  
Primary Examiner, Art Unit 1795**

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